AMENDMENTS TO THE CLAIMS

1. (Previously Presented) A photolithographic reduction projection catadioptric objective with a beam path, comprising: a first optical group including an even number of at least six mirrors; and a second at least substantially dioptric optical group more imageward than said first optical group including a number of lenses, and wherein said first optical group provides compensative axial colour correction for said second optical group, wherein a virtual image is formed by the first optical group physically on the object side of a sixth mirror and optically further along the optical beam path after said sixth mirror.

2. (Original) The objective of Claim 1, wherein said image is formed with a numerical aperture of at least substantially 0.65.

3. (Canceled)

4. (Previously Presented) The objective of Claim 1, wherein said at least four mirrors of said first optical group include a convex mirror arranged most imageward in the beam path of the objective, and wherein said second optical group receives a beam from said convex mirror.

5. (Previously Presented) The objective of Claim 1, wherein optical surfaces of each minor of said objective are at least sections of surfaces of revolution each having a common axis of symmetry.

6. (Original) The objective of Claim 1, wherein said second optical group is configured for independent compensative lateral aberrative correction.

7. (Previously Presented) A photolithographic reduction projection catadioptric objective, comprising: a first optical group including an even number of at least six mirrors for producing a virtual intermediate image; and a second at least substantially dioptric optical group more imageward than said first optical group, said second optical group including a number of lenses for receiving the virtual image and providing image reduction, and wherein said first optical group provides compensative axial colour correction for said second optical group, wherein a virtual image is formed by the first optical group physically on the object side of a sixth mirror and optically further along the optical beam path after said sixth mirror.

8. (Previously Presented) The objective of Claim 7, wherein said second optical group is configured for independent compensative lateral colour correction.

9. (Original) The objective of claim 1, wherein said image is formed with a numerical aperture of at least substantially 0.70.

10. (Original) The objective of claim 1, wherein said image is formed with a numerical aperture of at least substantially 0.75.

11. (Previously Presented) A photolithographic reduction projection catadioptric objective, comprising: a first optical group including an even number of at least six mirrors including a convex most imageward mirror, and a second at least

substantially dioptric optical group more imageward than said first optical group receiving a beam from the convex most imageward mirror of the first optical group, said second optical group including a number of lenses providing image reduction, and wherein said first optical group provides compensative axial colour correction for said second optical group, wherein an intermediate image is formed optically between a fourth mirror and a fifth mirror and a virtual image is formed optically further along the optical beam path after the first optical group.

12. (Previously Presented) The objective of Claim 9, wherein said second optical group is configured for independent compensative lateral color correction.

13. (Currently Amended) A photolithographic reduction projection catadioptric objective, comprising: a first optical group including an even number of at least six mirrors; and a second at least substantially dioptric optical group more imageward than said first optical group including a number of lenses for providing image reduction and having a lens being arranged immediately adjacent to the first optical group, wherein a third mirror of the first optical group and a fourth mirror of the first optical group are disposed optically after a first mirror of the first optical group and a second mirror of the first optical group but are physically disposed between the first mirror and the second mirror.

14. (Original) The objective of Claim 11, wherein said image is formed with a numerical aperture of at least substantially 0.65.

15. (Canceled)

16. (Previously Presented) The objective of Claim 11, wherein said at least six mirrors of said first optical group include a convex most imageward mirror, and wherein said second optical group receives a beam from said convex most imageward mirror.

17. (Previously Presented) The objective of Claim 11, wherein optical surfaces of each mirror of said objective are at least sections of surfaces of revolution each having a common axis of symmetry.

18. (Previously Presented) The objective of Claim 11, wherein said second optical group is configured for independent compensative lateral colour correction.

19. (Previously Presented) The objective of Claim 11, further comprising an unobscured system aperture.

20. (Previously Presented) The objective of Claim 17, wherein said unobscured aperture is located within said second optical group.

21. (Original) The objective of Claim 11, further being devoid of any planar folding mirrors.

22. (Previously Presented) The objective of Claim 11, wherein an optical beam incident at said first optical group is divergent after a most imageward mirror of said first optical group.

23. (Previously Presented) The objective of Claim 11, which is further an unobscured system comprising parallel axes of symmetry of curvatures of each optical element of said first and second optical groups, and wherein no more than three of said

optical elements are cut to deviate in a substantially non-rotationally symmetric form.

24. (Previously Presented) The objective of Claim 11, comprising in sequence, in an optical direction form an object side of said objective before said first optical group to an image side of said objective after said second optical group, a first catadioptric sub group for producing a real intermediate image, a second sub group including catoptric components for producing a virtual image, and said second at least substantially dioptric group for producing a real image.

25. (Previously Presented) The objective of Claim 11, comprising in sequence, in an optical direction from an object side of said objective before said first optical group to an image side of said objective after said second optical group, a first field lens sub group, a second catadioptric sub group comprising one or more negative lenses and a concave mirror, generating axial chromatic aberration, a third sub group including an odd number of catoptric components, and a fourth positive lens group.

26. (Previously Presented) The objective of Claim 11, wherein said second optical group comprises a plurality of lenses, wherein a diameter of a beam incident upon each of said plurality of lenses is at least half of a diameter of said each lens.

27. (Original) The objective of Claim 11, wherein said objective is doubly telecentric.

28. (Previously Presented) The objective of Claim 11, wherein optical paths of projected rays are redirected at each lens element

of said second optical group at an angle of less than substantially 20°.

29. (Original) The objective of Claim 11, wherein said image is formed with a numerical aperture of at least substantially 0.70.

30. (Original) The objective of Claims 11, wherein said image is formed with a numerical aperture of at least substantially 0.75.

31. (Canceled)

32. (Currently Amended) A photolithographic reduction projection catadioptric objective, comprising: a first optical group including an even number of at least six mirrors; and a second at least substantially dioptric optical group more imageward than said first optical group including a number of lenses for providing image reduction, wherein a third mirror and a fourth mirror are disposed optically after a first mirror and a second mirror but are physically disposed between the first mirror and the second mirror, wherein at least one lens is arranged in the optical path between the first mirror and a last mirror of the first optical group.